

# Regulation of Geometrical Parameters Deviations of Automotive Components Parts through Diagnostic Measurements Organization

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## Abstract

© 2017 The Authors. Published by Elsevier Ltd. Standard quality management methods are too laborious to apply them to compact business suppliers of automotive components. Analysis of the existing methods for equipment diagnosing was carried out and their shortcomings were revealed. There is a need for special high-precision instruments, the need for stopping equipment and a dismantling clamping set-up. The article offers a method for error diagnostics in the technological system position modules from the values of the performance precision machined parts with the instrument for height measuring directly at the workplace. This method significantly reduces the time necessary to plan corrective actions and risk of poor performance. The article contains the example of application of the "brake pad" detail measurement technique for corrections of the technological system modules.

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## Keywords

Machining, measuring, monitoring of the precision, response plan

## References

- [1] S.V. Kasjanov, A.V. Kalyashina, The Entry of the Russian Industry in the global market as a source of experience for managers and specialists from other countries, Innovations of Sustainable Production for Green Mobility, 3-d International Chemnitz Manufacturing Colloquium ICMC 2014 - Fraunhofer Institute for Machine Tools and Forming Technology IWU, 2014, Part 1, pp. 733-741.
- [2] R.M. Khusainov, S.F. Belov, and O.V. Chukhontseva Diagnosis of CNC machine tools in terms of circular interpolation's accuracy figure IOP Conference, Materials Science and Engineering 69 1 2014 012022
- [3] R.M. Khusainov, and I.F. Sharafutdinov Methods of assessing the dynamic stability of the cutting process using UNIGRAPHICS NX/IOP Conference Materials Science and Engineering 134 1 2016 012042
- [4] R.M. Khusainov, A.R. Sabirov, I.I. Mubarakshin, Preparation of computational models in the study of rigidity of technological systems, Applied and Fundamental Studies, Proceedings of the 5th International Academic Conference Publishing House Science and Innovation Center, 2014, pp. 90-92.
- [5] A.V. Kirichek, A.G. Ivakhnenko, E.O. Ivakhnenko, and A.Y. Altukhov Geometric accuracy of the machines with strut-type structures International Journal of Applied Engineering Research 9 21 2014 9951 9958
- [6] O. Anikeeva, A. Ivakhnenko, and A. Zhirkov Parametric reliability assurance for machine-tools Procedia Engineering 150 2016 712 716
- [7] A.G. Kol'tsov, and V.B. Sukhinin Ensuring equipment precision Russian Engineering Research 32 1 2012 93 94

- [8] A.G. Kol'zov, D.A. Blokhin, A.V. Khabarov, D.A.Redorovich, The influence of kinematic characteristics of Stewart platform for precision moving measuring mechanism, 2014 Dynamics of Systems, Mechanisms and Machines, Dynamics 2014 Proceedings. (2014) 7005669.
- [9] I.P. Balabanov, O.N. Balabanova, A.V. Groshev, Formation of initial data of the workpiece batch in simulation modelling precision forming, IOP Conference, Materials Science and Engineering. 86(1).
- [10] V.V. Bushuev, A.P. Kuznetsov, F.S. Sabirov, V.S. Khomyakov, and V.V. Molodtsov Precision and efficiency of metal-cutting machines Russian Engineering Research 36 9 2016 762 773
- [11] A.A. Elakova, A.P. Abyzov, and V.B. Stupko Quality characteristics study of complex shape parts after vibroabrasive treatment International Journal of Pharmacy and Technology 8 3 2016 14815 14821
- [12] S.V. Kas'yanov, and D.T. Safarov Diagnosis of technical state of equipment and tools according to indices of technological accuracy Avtomobil'naya Promyshlennost 5 2004 24 28
- [13] A.G. Kondrashov, S.V. Kasyanov, D.T. Safarov, and A.V. Kuznetsova Diagnostic measurements of geometrical parameters of spatial and difficult details of autocomponents by one-coordinate altimeter Control. Diagnostics 8 2013 60 64
- [14] A.G. Kondrashov, and D.T. Safarov Prediction of accuracy when handling by cutting News of higher educational institutions, Mechanical engineering 12 2014 63 69
- [15] S.V. Kasjanov, A.G. Kondrashov, D.T. Safarov, Research of characteristics of wearproof coating for cutting tools, INTERFINISH-SERIA 2014, International Conference on Surface Engineering for Research and Industrial Applications. (2014) 124.
- [16] R.M. Murtazin, D.T. Safarov, and A.G. Kondrashov Wear of working surfaces as factor of operability of machine parts INTERFINISH-SERIA 2014, International Conference on Surface Engineering for Research and Industrial Applications 2014 62
- [17] M.A. Samsonov, and S.V. Kas'yanov Flexible plant systems for post-examination repairs instead of scheduled preventive maintenance system Avtomobil'naya Promyshlennost 2 2003 22 26
- [18] S.V. Kasjanov, A.G. Kondrashov, D.T. Safarov, Russian patent 2496611, 2013.
- [19] S.V. Kasjanov, A.G. Kondrashov, D.T. Safarov, Russian patent 133040, 2013.
- [20] S.V. Kasjanov, A.G. Kondrashov, D.T. Safarov, Russian patent 133039, 2013.
- [21] A.G. Kondrashov, S.V. Kasjanov, D.T. Safarov, N.A. Minnekhanova, A.V. Kuznetsova, Russian patent 2581384, 2016.